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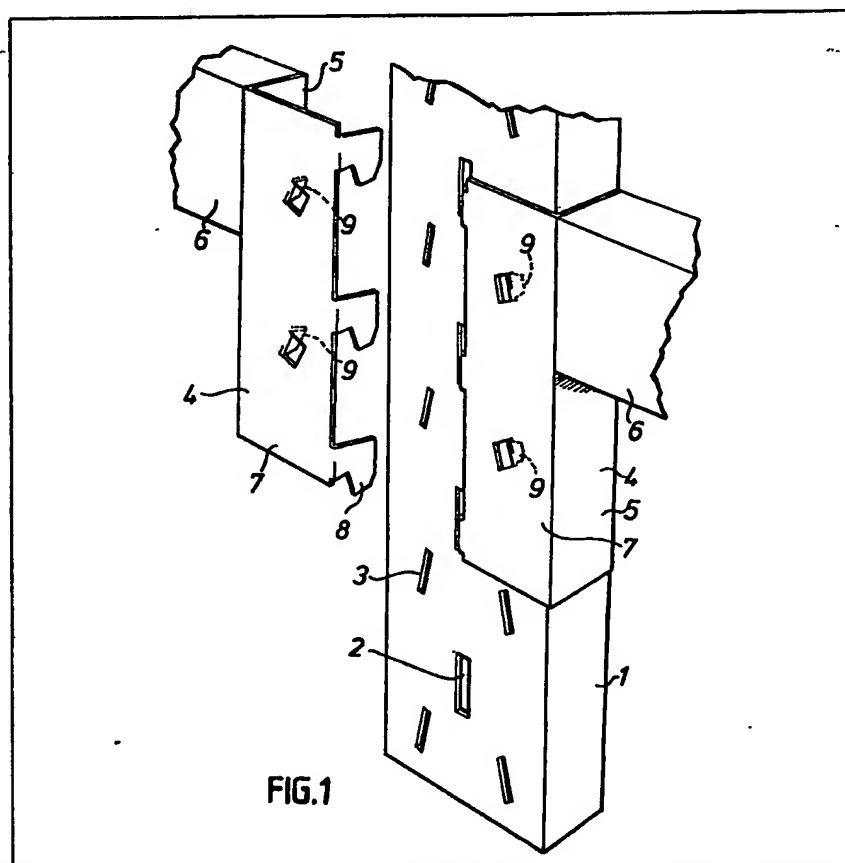
Reading

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(54) Hook joint for racking etc

(57) A hook joint for racking has a vertical support (1) having laterally spaced apertures (2), (3) in a wall thereof, the side edges of said apertures (2) and (3) which are nearest to one another being angled away from one another in a downward direction, and a bracket (4) having a first flange (5) whereby it is securable to a horizontal beam (6), a second flange (7) at right-angles to the flange (5), hook portions (8) on the flange (7) which extend at right-angles thereto and which are adapted to engage the apertures (2) and tab portions (9) cut and pressed out of the flange (7) and adapted to engage the apertures (3).



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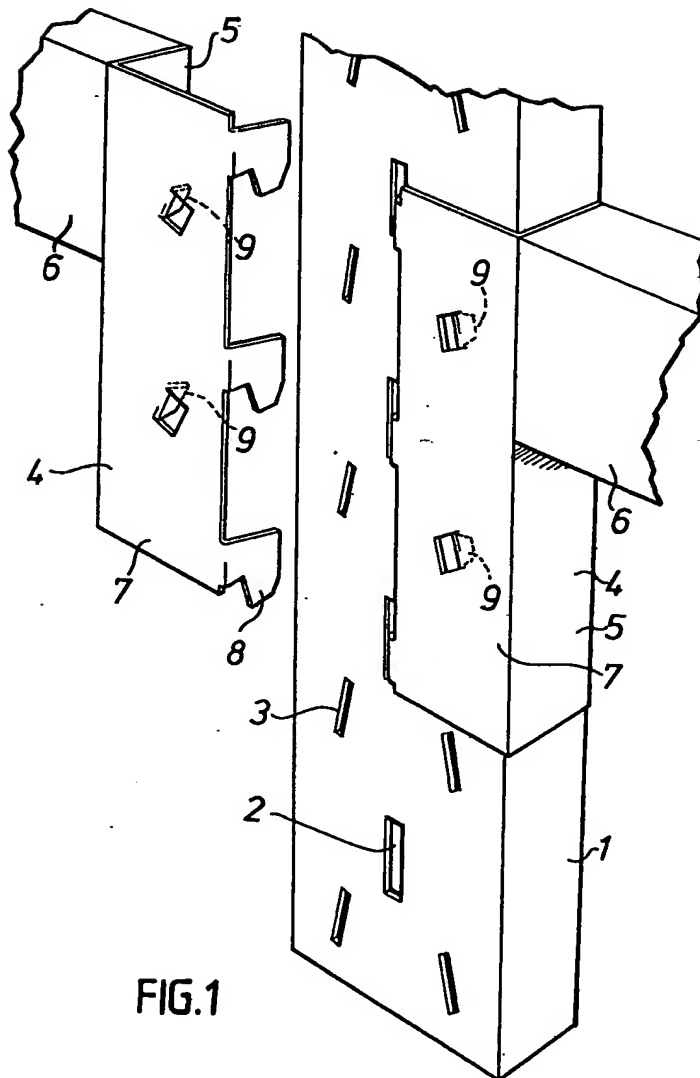


FIG. 1

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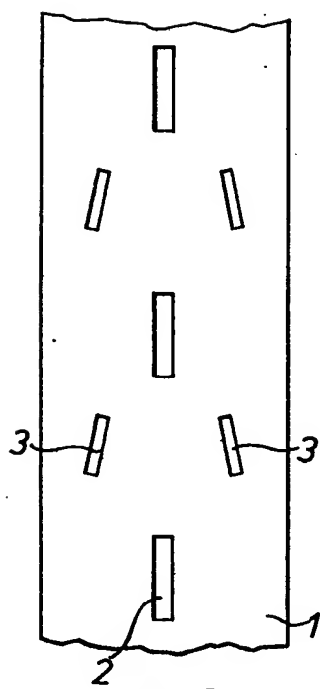


FIG. 3

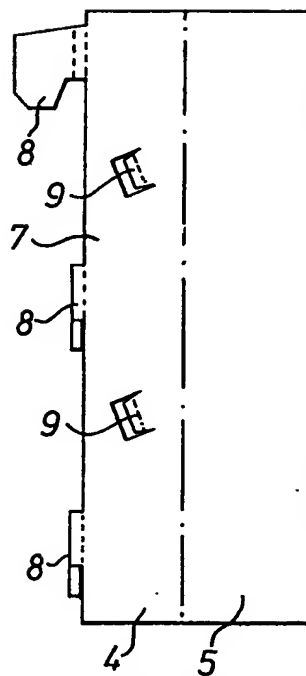


FIG. 2

SPECIFICATION

Releasable connector means

- 5 This invention relates to releasable connector means for connecting a horizontal member to a vertical support.

Releasable connector means are known for releasably connecting horizontal members
 10 such as beams to vertical supports such as posts or uprights and are commonly used in adjustable racking and shelving of the kind used in warehouses and the like. Such a
 * releasable connector means generally comprises spaced vertically aligned apertures in
 15 one wall of a vertical support member having at least two walls at right-angles to one another, that side of each aperture nearest the other wall of the vertical support member
 20 being substantially straight and being angled with respect to said other wall in a direction away from said other wall from the top to the bottom thereof, and a bracket member comprising a first flange portion secured or secu-
 25 rable to one end of a horizontal member, a second flange portion extending at right-angles to said first flange portion, and at least one hook portion on that side of said second flange portion remote from said first flange
 30 portion, said hook portion extending substantially at right-angles to said second flange portion substantially parallel with said first flange portion, whereby when the hook portion is engaged in an aperture in said vertical
 35 member said first flange portion will engage said other wall of said vertical member. Said angling of said side of the aperture produces a wedge effect which causes said first flange portion to be drawn into tight engagement
 40 with said other wall of the vertical member when a downward force is applied to said bracket member, e.g., due to a load being supported on said horizontal member, the tightness of said engagement increasing with
 45 any increase in said downward force. Generally said bracket member comprises a plurality of hook portions adapted to engage a plurality of adjacent apertures in said vertical member.

A disadvantage with such known connector
 50 means is that said bracket member can become so tightly wedged into engagement with said vertical member, particularly when the horizontal member has been supporting heavy loads, that it is difficult to disengage the
 55 bracket member from the vertical member, e.g., in order to dismantle or adjust racking of shelving of which the vertical member and bracket member form part.

The present invention has as its object to
 60 provide a releasable connector means which overcomes or mitigates the aforesaid disadvantage.

The present invention provides a releasable
 65 connector means comprising at least two laterally spaced apertures in a wall of a vertical

support member, the lateral side edges of said
 apertures which are nearest to one another
 being substantially straight and being respectively angled away from one another in a
 70 downward direction, and a bracket member comprising a first flange portion secured or securable to one end of a horizontal member, a second flange portion extending substantially at right-angles to said first flange portion,
 75 a hook portion extending substantially at right-angles to said second flange portion on that side thereof remote from said first flange portion, said hook portion being adapted to engage one of said laterally spaced apertures,
 80 and a projection on said second flange portion, said projection being laterally spaced from said hook portion and being adapted to engage the other of said laterally spaced apertures.

85 Preferably said apertures are spaced both laterally and vertically from one another as are said hook portion and said projection.

In order that said bracket may be engaged
 with said vertical support member at a desired
 90 adjusted position thereon said wall of the vertical support member may have two laterally spaced series of spaced vertically aligned apertures therein, each aperture in one of said series preferably being vertically spaced from
 95 the nearest adjacent aperture or apertures in the other series.

Said bracket preferably comprises a plurality of vertically spaced hook portions, e.g., three or four hook portions, adapted to engage a
 100 plurality of adjacent apertures in a first said series of spaced vertically aligned apertures and a plurality of said projections, e.g., two or three projections, adapted to engage a plurality of adjacent apertures in a second said
 105 series of spaced vertically aligned apertures.

Said laterally spaced apertures may comprise elongated slots the major axes of which are respectively angled away from one
 another in a vertically downward direction.

110 Preferably the or each slot adapted to receive the or a said hook portion extends vertically whilst the or each slot adapted to receive a said projection extends at an angle to the vertical.

115 The or each said projection may comprise a second hook portion or a tab portion and such second hook portion or tab portion may be cut and pressed out of the material of said second flange portion.

120 Where the or each said hook portion and the or each said projection are planar, as they will be if formed integrally with the bracket member, then they are preferably contained in planes which are angled with respect to one
 125 another at the same angle as the respectively angled lateral side edges of said apertures.

The arrangement of said apertures in the vertical support member and the arrangement of said hook portion(s) and projection(s) is
 130 preferably such that the only wedge action

which occurs is between said lateral side edges of said apertures on the one hand and between said hook portion(s) and said projection(s) on the other. In this way the area of wedge contact between the bracket member and the vertical support member is small as compared with the known connector means wherein the whole of the area of the first flange portion engages a wall of the vertical member and as a consequence the connector means of the present invention is much easier to disengage than the known connector means.

The invention will be more particularly described with reference to the accompanying drawings, in which:-

Figure 1 is a diagrammatic perspective view of connector means according to the present invention,

Figure 2 is an elevation of a blank for a bracket member forming part of the connector means of the present invention, and

Figure 3 is a front elevation of a vertical support member forming part of the connector means of the present invention.

Referring to the drawings it will be seen that the connector means of the present invention comprises a vertical support member 1 having a first series of spaced vertically aligned apertures 2 and second and third series of spaced vertically aligned apertures 3 arranged one on either side of the first series of apertures 2, the apertures 3 being spaced both laterally and vertically from the apertures 2. The apertures 2 and 3 are in the form of elongate slots with the major axes of the apertures 2 extending vertically and the major axes of the apertures 3 angled away from the axes of the aperture 2 in the downward direction.

The connector means of the present invention further comprises a bracket member 4 having a first flange portion 5 secured or securable, e.g., as by welding, to one end of a horizontal member or beam 6, a second flange portion 7 extending at right-angles to the first flange portion 5, a plurality of hook portions 8 spaced along that side of the second flange portion 7 remote from the first flange portion 5, the hook portions 8 being turned inwardly so that they extend at substantially right-angles to the second flange portion 7, and tab portions 9 which are cut and bent out of the material of the second flange portion 7 and which extend inwardly at substantially right-angles to the second flange portion 7. The tab portions 9 are angled with respect to the hook portions 8 in the same manner as the apertures 3 are angled with respect to the apertures 2. In Fig. 2 the upper flange portion 8 is shown before it has been bent at right-angles to the flange portion 7 whilst the remaining two hook portions have been shown bent at right-angles to flange portion 7.

The hook portions 8 are adapted to engage selected adjacent apertures 2 of the vertical support member 1 whilst the tab portions 9 are adapted to engage corresponding apertures 3 of either the second or third series.

Due to the angling of the major axes of the apertures 3 a wedge effect is produced as the flange portions 8 and tab portions 9 are moved downwardly in the apertures 2 and 3 with which they are engaged and this wedge effect serves to retain the bracket member 4 in engagement with the vertical support member 1 whilst allowing the bracket member 4 to be readily disengaged from the support member 1 should this be required.

The apertures 2 are of a width sufficient to accommodate two hook portions 8 side-by-side and two series of apertures 3 are provided so that bracket members 4 can be engaged with the vertical support member 1 from opposite sides thereof as shown in Fig. 1. It will be seen from Fig. 1 that the bracket members 4 on opposite sides of the vertical support member 1 are of opposite hand, i.e. are mirror images of one another. It will be understood that each horizontal member or beam 6 will be supported at both of its ends and will have bracket members 4 of opposite hand secured to the end thereof.

Whilst the tab portions 9 have been shown as simple tabs it will be understood that these could, if desired, be in the form of hooks similar to the hook portions 8.

100 CLAIMS

1. A releasable connector means comprising at least two laterally spaced apertures in a wall of a vertical support member, the lateral side edges of said apertures which are nearest to one another being substantially straight and being respectively angled away from one another in a downward direction, and a bracket member comprising a first flange portion secured or securable to one end of a horizontal member, a second flange portion extending substantially at right-angles to said first flange portion, a hook portion extending substantially at right-angles to said second flange portion on that side thereof remote from said first flange portion, said hook portion being adapted to engage one of said laterally spaced apertures, and a projection on said second flange portion, said projection being laterally spaced from said hook portion and being adapted to engage the other of said laterally spaced apertures.

2. A releasable connector means according to claim 1, wherein said apertures are spaced both laterally and vertically from one another as are said hook portion and said projection.

3. A releasable connector means according to claim 1 or 2, wherein said wall of said vertical support member has two laterally spaced series of spaced vertically aligned ap-

ertures therein, whereby said bracket may be engaged with said vertical support at a desired adjusted position.

4. A releasable connector means according to claim 3, wherein each of the apertures in one of said series is vertically spaced from the nearest adjacent aperture or apertures in the other said series.

5. A releasable connector means according to claim 3 or 4, wherein said bracket comprises a plurality of vertically spaced hook portions adapted to engage a plurality of adjacent apertures in a first said series of spaced vertically aligned apertures and a plurality of vertically spaced projections adapted to engage a plurality of adjacent apertures in a second said series of spaced vertically aligned apertures.

6. A releasable connector means according to any one of the preceding claims, wherein said laterally spaced apertures comprise elongated slots the major axes of which are respectively angled away from one another in a vertically downward direction.

7. A releasable connector means according to claim 6, wherein the or each said slot adapted to receive the or a said hook portion extends vertically and the or each said slot adapted to receive the or a said projection extends at an angle to the vertical.

8. A releasable connector means according to any one of the preceding claims, wherein said projection, or each of them, comprises a second hook portion or a tab portion.

9. A releasable connector means according to claim 8, wherein said second hook portion or tab portion is cut and pressed out of the material of said second flange portion.

10. A releasable connector means according to any one of the preceding claims, wherein said hook portion and said projection are each planar and are contained in planes which are angled with respect to one another at the same angle as the respectively angled lateral side edges of said apertures.

11. A releasable connector means according to any one of the preceding claims, wherein the arrangement of said apertures in the vertical support member and the arrangement of said hook portion(s) and said projection(s) is such that the wedge contact between the vertical support member and the bracket member occurs only between said lateral side edges of said apertures on the one hand and said hook portion(s) and said projection(s) on the other.

12. A releasable connector means substantially as herein described with reference to the accompanying drawings.